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10/540,111

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EXAMINER

RUBY, TRAVIS C

ART UNIT

PAPER NUMBER

3744

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/540,111	<b>Applicant(s)</b> BURK ET AL.	
	<b>Examiner</b> TRAVIS RUBY	<b>Art Unit</b> 3744	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 November 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/12/2009</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities:
  - a. The Brief Description of the Drawings section should individually describe each of the drawings so as to allow a person to easily identify the key features of each drawing. See MPEP 608.01(f)Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4-10, 16, 17, 20, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Karl (US2001/0003311A1).

Karl teaches:

**Re Claim 1.** A method for operating an air conditioning system of a vehicle, comprising:  
circulating in a circuit a fluid (refrigerant) to condition an airstream;  
operating the circuit in a cooling mode or a heating mode (Paragraph 24), wherein the circuit includes a condenser or a compressor (ref 4), a heat exchanger (ref 26), and an intermediate store (ref 13) in the heating mode (Paragraph 29 and 30); and

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controlling the circuit such that the intake pressure of the condenser or the compressor at least partially overshoots a saturation pressure in the circuit caused by the ambient temperature (Paragraph 6 states that the system is ran at a supercritical pressure and Paragraph 35 states that the system is controlled either by the compressor or the expansion valve based on sensors to achieve the supercritical pressure state.).

**Re Claim 2.** The method as claimed in claim 1, further comprising operating the circuit during the heating mode in a dextrorotary triangulation process, wherein an exit side of the condenser or the compressor (ref 4) connects to an entry side of a control valve (ref 22), an exit side of the control valve connects to an entry side of the heat exchanger (ref 26), an exit side of the heat exchanger connects to an entry side of the intermediate store (ref 13), and an exit side of the intermediate sore connects to an entry side of the condenser or the compressor (ref 4) (see Figure 1, Paragraphs 29 and 30).

**Re Claim 4.** The method as claimed in claim 1, further comprising dividing the fluid in the circuit into at least one active part (branch 1 & 3) and at least one passive part (branch 1 & 2) while in the heating mode (Paragraph 29).

**Re Claim 5.** The method as claimed in claim 1, of further comprising: activating the heating mode; and routing the fluid out of the passive part of the circuit into the active part of the circuit (Paragraph 31).

**Re Claim 6.** The method as claimed in claim 1, further comprising routing out the fluid of the passive part of the circuit into the active part of the circuit when a predeterminable

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threshold value for the intake pressure in the active part of the circuit is undershot (Paragraph 31 and 35 teach a pressure sensor is used to control the air conditioner).

**Re Claim 7.** The method as claimed in either claim 5, further comprising transferring to transfer the fluid out of the passive part of the circuit into the active part of the circuit by changing the circuit operated in the heating mode over to the cooling mode (Paragraph 31 and 35).

**Re Claim 8.** The method as claimed in either claim 5, further comprising transferring the fluid out of the passive part of the circuit into the active part of the circuit by changing the circuit operated in the heating mode to a laevorotatory triangular process (Paragraph 31 and 35).

**Re Claim 9.** The method as claimed in either claim 7, further comprising: operating the circuit in the cooling mode or in the laevorotatory triangulation process up to the undershooting of a settable threshold value, and changing the circuit to the heating mode again after the undershooting of the threshold value. (Paragraph 31 and 35 teach a pressure sensor is used to control the air conditioner).

**Re Claim 10.** The method as claimed in claim 9, further comprising predetermining the threshold value for an intake pressure and/or for a high pressure and/or for a hot-gas temperature at the condenser or the compressor (Paragraph 31 and 35 teach a pressure sensor is used to control the air conditioner).

**Re Claim 16.** An air conditioning system for a vehicle (Figure 1) comprising: a circuit (Figure 1) operable in a cooling or heating mode, configured to circulate a fluid (refrigerant), the fluid configured to condition an air stream (Paragraph 24), wherein in the heating mode, the circuit includes: a heat exchanger (ref 26), an intermediate store (ref 13), and a condenser or a compressor (ref 4) for the intermediate storage or for the condensation of the fluid, wherein the condenser or the compressor is configured to operate at an intake pressure that is higher than the saturation pressure in the circuit caused by the ambient temperature (Paragraph 35).

**Re Claim 17.** The air conditioning system as claimed in claim 16, further comprising: an evaporator, wherein a secondary side is included in a flow duct of the air stream (F2), and a primary side is connected to the circuit, and an exit side is connected to the intermediate store (ref 13), and wherein a nonreturn valve (ref 12) is interposed between the evaporator and the intermediate store (Paragraph 26 & 29).

**Re Claim 20.** The air conditioning system as claimed in claim 16, further comprising a control device (ref 31 Figure 2) arranged between the heat exchanger and the intermediate store (Paragraph 32).

**Re Claim 22.** The air conditioning system as claimed in claim 16, wherein the circuit is subdivided into at least one active part (branch 1 & 3) and at least one passive (branch 1 & 2) part (Paragraph 29).

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**Re Claim 23.** The air conditioning system as claimed in claim 22, wherein the active part is connected to the passive part by control device (ref 22), configured to open when the fluid quantity in the active part of the circuit overshoots a predeterminable threshold value (Paragraph 31 and 35 teach a pressure sensor is used to control the air conditioner).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Karl (US2001/0003311A1) in view of Hesse (US2003/0177778A1).

**Re Claim 3.** Karl teaches that the compressor can be of a variable capacity and that the pressure of the system can be regulated, it fails to specifically teach a pressure range of 10 bar to 110 bar. Hesse teaches though that the intake pressure can be controlled in a range of about 20 bars (Paragraph 15). It would have been obvious to one having ordinary skill in the art at the time of invention to have an adjustable intake pressure, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

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6. Claims 12 & 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karl (US2001/0003311A1, will be referred to as Karl 'A1) in view of Karl (US5737930 will be referred to as Karl '930, as cited by applicant).

**Re Claim 12.** Karl 'A1 fails to teach the cooling mode being operated for a predeterminable period of time, the circuit being capable of being changed over to the heating mode again after the expiry of the period of time. Karl '930 teaches the cooling mode being operated for a predeterminable period of time, the circuit being capable of being changed over to the heating mode again after the expiry of the period of time (Column 4 lines 30-33). In view of Karl '930's teachings it would have been obvious to one of ordinary skill in the art at the time of invention to include a switchover time to Karl 'A1 since it allows for optimal efficiency and comfort of the system.

**Re Claim 15.** Karl 'A1 fails to teach that a pressure equalization can be carried out in the circuit after the return to the heating mode. Karl '930 teaches that a pressure equalization can be carried out in the circuit after the return to the heating mode (Column 4 lines 1-18, branch 13 helps equalize the pressure when switching between the two modes). In view of Karl '930's teachings it would have been obvious to one of ordinary skill in the art at the time of invention to include a pressure equalization since it prevents slugging the compressor and enhances the safety of the system.



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7. Claims 11, 13, 14, 18, 19, 21, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karl (US2001/0003311A1).

**Re Claim 11.** Karl teaches the threshold value of the intake pressure can be controlled by a pressure sensor which is reliant on ambient conditions, but fails to specifically teach being 3 bars below the saturation pressure. It would have been obvious to one having ordinary skill in the art at the time of invention to have an adjustable threshold pressure, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

**Re Claim 13 & 14.** Karl teaches an air stream through the evaporator/gas cooler but fails to teach that it can be reduced after the changeover to the cooling mode or to the laevorotatory triangulation process. It would have been obvious to one having ordinary skill in the art at the time of invention was made to adjust the fan speed, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art. In re Stevens, 101 USPQ 284 (CCPA 1954).

**Re Claim 18, 19, and 26.** Karl teaches an evaporator (ref 11) and an intermediate store (ref 13) but fails to specify the size of each component. It would have been an obvious matter of design choice to make the evaporator volume smaller than the intermediate storage volume, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). In addition, it is obvious that the intermediate storage would have to

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be bigger than the evaporator in order to accommodate all the refrigerant that flows out of the heat exchangers.

**Re Claim 21.** Karl teaches a pressure sensor (ref 40) is assigned on the discharge side of the condenser (ref 4). Karl discloses the claimed invention except for locating the pressure sensor at the intake side of the compressor. It would have been obvious to one of ordinary skill in the art at the time of invention was made to locate the pressure sensor on the intake side of the compressor, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

**Re Claim 24.** Karl teaches that the condenser or compressor (ref 4) is connected to the evaporator on the exit side via a control means (ref 31) and on the entry side (ref 30) via an associated controllable connecting line (ref 3), after the opening of the control means gaseous fluid passes into the evaporator and forces liquid fluid out of the evaporator into the active part of the circuit (Figure 2, Paragraphs 31-32, 35).

**Re Claim 25.** Karl teaches the threshold value of the intake pressure can be controlled by a pressure sensor which is reliant on ambient conditions, but fails to specifically teach being 5 bars below the saturation pressure. It would have been obvious to one having ordinary skill in the art at the time of invention to have an adjustable threshold pressure, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

***Response to Arguments***

8. Applicant's arguments filed 11/24/2009 have been fully considered but they are not persuasive.

9. Applicant argues that Karl 1 fails to disclose "controlling the circuit such that the intake pressure of the condenser or the compressor at least partially overshoots a saturation pressure in the circuit caused by the ambient temperature". Applicant however admits on Page 11 of arguments that Karl 1 does disclose "that the power in the air conditioning loop is controlled by one or two sensors". Karl 1 is directed to a vehicle air conditioning system utilizing CO<sub>2</sub> refrigerant at a supercritical pressure to achieve refrigeration. A supercritical refrigeration system by definition is a system in which the saturation pressure is overshoot to achieve high efficiency in the system. In addition the term "caused by ambient temperature" is a broad limitation. It is well known that refrigerants are affected by temperature and pressure and that refrigeration pressure is proportional to refrigeration temperature. Thus, the ambient temperature of the circuit would affect the refrigerant temperature and pressure in some aspect. In addition, the ambient air temperature flowing across the heat exchangers changes the pressure of the refrigerant contained in the circuit, as is well known in the art. Therefore, Karl 1 does disclose overshooting the saturation pressure caused by the ambient temperature since the pressure sensors of Karl would be affected by the ambient air temperature.

10. Applicant argues that claims 12 and 15 should be allowable since claim 1 is allegedly allowable. Since claim 1 is still rejected, claims 12 and 15 are still rejected.

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11. Applicant's arguments with regards to Claims 3, 11, 13-14, 18-19, 21, and 24 do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. In addition, each one of the rejections cites the relevant part of the case law of why the claim is rejected. Proper analysis has been provided.

### ***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

13. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRAVIS RUBY whose telephone number is (571)270-5760. The examiner can normally be reached on Monday-Friday 9:30-6:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules or Cheryl Tyler can be reached on 571-272-6681 or 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Travis Ruby/  
Examiner, Art Unit 3744

/Frantz F. Jules/  
Supervisory Patent Examiner, Art Unit 3744